

User Manual

ETU01C

Dual Port E1 Access Multiplexer with Sub E1



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ETU01C User manual

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User Manual for Dual Port E1 Access Multiplexer with Sub E1
Thank you for choosing our product.
Please read this manual carefully before using the **ETU01C**.

This manual supports the following models:

ETU01C 100-240 VAC model

ETU01C -48V DC model

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All specifications are subject to change without prior notice.

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Chapter 1 Introduction

1.1 Introduction

The **ETU01C** provides an economic multiplexing solution for Fractional E1 network services. Two DTE devices may be linked to the **ETU01C** at combined data rates of 64kbps to 2048kbps. The **ETU01C** also provides one E1 sub-link which may be connected over a public E1 network. The E1 sub-link will perform Drop&Insert with user-defined timeslot connections from a PABX or other E1 equipment to E1 network services.

The **ETU01C** supports local control and diagnostics via the front panel LCD and a serial RS-232 craft port. This feature enables users to easily configure the unit, execute the in-service diagnostics and monitor the network status.

1.2 Functional Description

The **ETU01C** data channels support user-selectable transmission rates, which are integer multiples of 64kbps, up to a maximum 2.048Mbps on twisted pair or coax cable. The **ETU01C** has two jumper selectable interfaces; RS-530 or V.35. Adapter cables are required to connect client equipment for V.35, X.21 or RS-449.

The **ETU01C** fully meets all of the E1 specifications including ITU G.703, G.704, G.706, G.732, and G.823.

Multiple clock source selection provides maximum flexibility in connecting both the E1 and user interfaces. The **ETU01C** has the flexibility to meet the timing requirements of various system configurations. The timing modes for the E1 link and for the user channel are selected by the setting of configuration data via the front panel LCD display, or terminal mode console port. The E1 link may be clocked from the E1 recovered receive clock (main E1 link or sub E1 link), from the user data ports, or from the internal oscillator.

The **ETU01C** provide IDLE CODE mode, you can set any time slot and insert the idle code with '00'-'FF', and the default code is '7F'.

The **ETU01C** includes a BERT generator and receiver which may internally connect to either main or sub E1 or to either data channel.

The **ETU01C** is available in either AC or DC models. Voltage models include AC (100-240VAC) or DC (18-72VDC). An internal relay ensures that the main to sub E1 is connected even if the system is powered off.

Chapter 1 Introduction

1.3 Typical System Applications

General

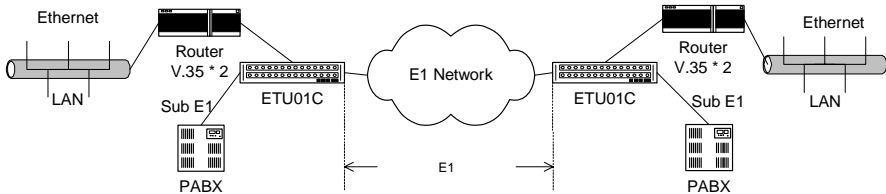
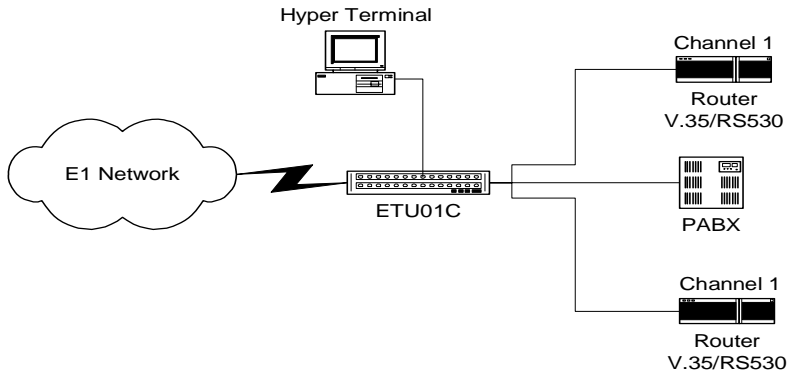


Figure 1-1: Example; Typical Application

In a typical application (Figure 1-1), the **ETU01C** is used to connect the synchronous data channels of two routers and the local and remote LANs over an E1 line. The fractional E1 data service is based on the assumption that the combined user data rate of all channel modules plus Sub-Link is equal to or is a fraction of the full available E1 bandwidth, in multiples of 64K. Up to two data channels may be connected plus an optional E1 sub-link.

1.4 E1 signal structure

The E1 line operates at a nominal rate of 2.048Mbps. The data transferred over the E1 line is organized into frames, with each E1 frame containing 256 bits. The 256 bits are organized as 32 time slots of eight bits each and carry the data payload.

Chapter 1 Introduction

E1 transmissions utilize two main types of framing: Frame Alignment Signal (FAS) and Multi-Frame Alignment Signal (MFAS). Framing is necessary in order for equipment receiving the E1 signal to be able to identify and extract the individual channels. PCM-30 (CAS) transmission systems use MFAS framing along with FAS framing. PCM-31 (CCS) transmission systems use only FAS framing.

Frame Alignment Signal (FAS) The 2.048 Mbps frame consists of 32 individual time slots (numbered 0-31). As described previously, each time slot consists of an individual 64 Kbps channel of data. In the FAS format, time slot 0 of every other frame is reserved for the frame alignment signal pattern. Alternate frames contain the FAS Distant Alarm indication bit and others bits reserved for national and international use.

Multi-Frame Alignment Signal (MFAS) MFAS framing uses Channel Associated Signaling (CAS) to transmit the A/B/C/D bits signaling information for each of 30 channels. This method uses the 32 time slot frame for mat with time slot 0 dedicated for the Frame Alignment Signal (FAS) and time slot 16 dedicated. For the Multi-Frame Alignment Signal (MFAS) and the Channel Associated Signaling (CAS).

E1 line signal

The basic E1 line signal is coded using the Alternate Mark Inversion (AMI) or HDB3 rule.

In the AMI format, "ones" are alternately transmitted as positive and negative pulse, whereas "zeros" are transmitted as a zero voltage level. AMI is not used in most 2.048 Mbps transmissions because synchronization loss occurs during long strings of data zeros.

In the HDB3 format, a string of four consecutive zeros is replaced with a substitute string of pulses containing an intentional bipolar violation. The HDB3 code substitutions provide high pulse density so that the receiving equipment is able to maintain synchronization with the received signal.

Chapter 1 Introduction

1.5 ETU01C Capabilities

E1 link line coding

The **ETU01C** supports two E1 line codes:

- AMI coding.
- HDB3 coding.

E1 framing formats

The **ETU01C** supports three formats:

- Unframed format. (in Unframed, only Data port 1 is supported)
- FAS (CCS, PCM-31) format. (TS0 reserved)
- MFAS (CAS, PCM-30) format. (TS0 and TS16 reserved)

User data channel rates

The **ETU01C** supports each user data channel rates which are a multiple of 64kbps. For maximum flexibility, the **ETU01C** supports combined data rates up to 2.048Mbps. The **ETU01C** supports flexible time slot assignment, allowing the user to freely specify the selection of time slots, in sequence or randomly, for each data channel.

User data channel interface

The **ETU01C** has two user data channel interfaces (CHANNEL 1 and CHANNEL 2) and two types of user data channel interfaces: V.35 or RS-530 (X.21, RS-449). The desired interface is achieved by jumper settings in the **ETU01C**. The **ETU01C** supports any two interface settings for the two user data channel interfaces.

System Timing Considerations

The **ETU01C** has the flexibility to meet the timing requirements of various system configurations. The timing mode for the E1 link and for the user channel are selected by the setting of configuration data via the front panel LCD display.

E1 link timing

The **ETU01C** E1 link receive path always operates on the receive clock. The **ETU01C** recovers the receive clock from the received E1 link data signal. The source of the **ETU01C** E1 link transmit clock can be selected by the user.

Chapter 1 Introduction

The following E1 link transmit timing modes are available.

◆ Loop back timing

The *ETU01C* E1 link transmit clock is locked to the recovered receive clock (Main link E1 or Sub link E1). This is usually the timing mode selected for network operation.

◆ Internal timing

The *ETU01C* E1 link transmit clock is derived from the internal clock oscillator. This timing mode is necessary in point-to-point applications over leased line. In this case, one *ETU01C* must use the internal oscillator, and the others must operate from the recovered clock.

◆ External timing

The *ETU01C* E1 link transmit clock is locked to the clock signal provided by the user DCE connected to one of the user's data channels. When the data channel is used as the clock source, the data channel must use clock timing mode 2 (DTE).

User data channel timing

The *ETU01C* has two user data channel clocking modes:

◆ Clock mode 1 (DCE)

The *ETU01C* data channel operates as a DCE providing the transmit and receive clocks (recovered timing) to the data terminal equipment connected to the user channel. The clocks are locked to the master timing.

◆ Clock mode 2 (DTE)

The *ETU01C* data channel operates as a DTE (crossover cable required) and accepts both transmit clock and receive clock (both from the ETC pin) from the user DCE equipment.

Chapter 1 Introduction

1.6 TECHNICAL SPECIFICATIONS

Main E1 and sub E1 links

Framing	-Unframed/Framed (sub link framed only) -FAS (PCM31) -FAS+CAS (PCM30) -CRC4 ON/OFF
Bit Rate	2.048 Mbps
Line Code	-AMI -HDB3
Line Impedance	-Unbalanced 75 ohms -Balanced 120 ohms
Relative Receive Level	0 to -43dB
"Pulse" Amplitude	-Nominal 2.37V \pm 10% for 75 ohms -Nominal 3.00V \pm 10% for 120 ohms
"Zero" Amplitude	0.1V
Tx Frequency Tracking	
Internal Timing	\pm 30 ppm
Loop back Timing	\pm 50 ppm
External Timing	\pm 100 ppm
Jitter Performance	According to ITU-T G.823
Complies With	ITU-T G.703, G.704, G.706 and G.732
Interface Connectors	-RJ45 -BNC

User Data Channels

Interface Types	-RS-530 -V.35
Interface Connectors	RS-530/V.35 25 pin, D-type Female
Data Rate	N*64kbps Where N equal 1 to 31 in CCS And N equal 1 to 30 in CAS
Clock Modes	-Clock Mode 1 (DCE): Receive and transmit clock (recovered) to the Synchronous DTE -Clock Mode 2 (DTE): Receive and transmit clock from the synchronous DCE (all from ETC pin).
Control Signals	-CTS constantly ON or follows RTS -DSR constantly ON, except during test loops -DCD constantly ON, except during signal loss
Time slot allocation	User defined, randomly assignable

Chapter 1 Introduction

Setup/Configuration

LCD	2 rows of 16 characters
Pushbutton Switches	-ESC -Left Arrow -Right Arrow -Enter

LED indicators

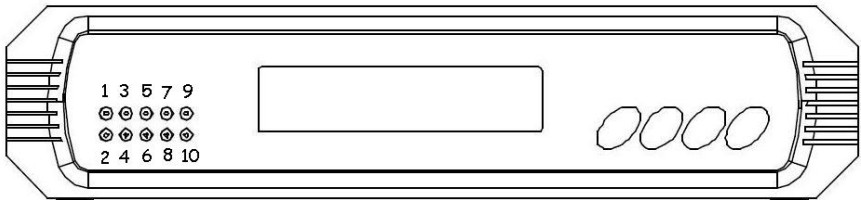


Figure1-2 *ETU01C* Front Panel

1. Power
Dual Color LED
GREEN: Power
RED: Test
2. Error (Only active in BERT mode)
RED: Pattern Error
3. Main E1 (include Signal loss, SYNC Loss)
Dual Color LED
GREEN: SYNC OK
RED : Signal Loss
RED flashing: SYNC Loss
LIGHT OFF: Main E1 chip failure
4. Alarm of Main E1
RED OFF: NO E1 Alarm
RED ON: E1 Alarm (AIS, RAI, MRAI)
5. Sub E1 (include Signal Loss, SYNC Loss)
Dual Color LED
GREEN : SYNC OK
RED : Signal Loss
RED flashing : SYNC Loss
LIGHT OFF : Sub E1 chip failure
6. Alarm of Sub E1
RED OFF: NO E1 Alarm
RED : E1 Alarm (AIS, RAI, MRAI)

Chapter 1 Introduction

7. CH1-TD of Datacomm
ON :DATA 1 FROM DTE
OFF : DATA 0 FROM DTE
flashing : DATA 0 and 1 FROM DTE
8. CH1-RD of Datacomm
ON : DATA 1 FROM Main E1
OFF : DATA 0 FROM Main E1
flashing : DATA 0 and 1 FROM Main E1
9. CH2-TD of Datacomm
ON :DATA 1 FROM DTE
OFF : DATA 0 FROM DTE
flashing : DATA 0 and 1 FROM DTE
10. CH2-RD of Datacomm
ON : DATA 1 FROM Main E1
OFF : DATA 0 FROM Main E1
flashing : DATA 0 and 1 FROM Main E1

RS-232 CONSOLE port

Port interface V.24/RS-232 asynchronous, DCE

Port connector 9 pin D-type female

Data rate 19200 bps

Data format -1 start bit -8 data bits -No parity -1 stop bits

Alarm relay -Floating pair of NO and NC contacts

-Contact ratings: 1A at 30 VDC resistive or 0.5A at 125 VAC resistive

Physical

Height: 44 mm

Width: 195 mm

Depth: 245 mm

Weight: 925g net

Power supply

Voltage (AC model) 100 ~ 240 VAC

Voltage (DC model) 18 ~ 72 VDC

Frequency 47 to 63 Hz for AC power

Power consumption 15 VA

Environment

Temperature 0-50C / 32-122F

Humidity 0 to 90% non-condensing

Chapter 2 Installation

2.1 General

This chapter provides detailed instructions for mechanical installation of the *ETU01C*. Following the completion of installation, please refer to Chapter 3 for front panel operating information and Chapter 4 for console port operating information.

2.2 Site Preparation

Install the *ETU01C* within reach of an easily accessible grounded AC outlet. The outlet should be capable of furnishing 100 to 240 VAC. Allow at least 10cm (4 inch) clearance at the rear of the *ETU01C* for signal lines and interface cables.

2.3 Mechanical Assembly

The *ETU01C* is designed for tabletop, shelf or rack mount installation, and except for rack mount installation, is delivered completely assembled. Rack mounted applications require installation of additional rack mounting brackets. No provisions are made for bolting the *ETU01C* to the tabletop.

2.4 Electrical Installation

2-4-1. Power connection

AC power is supplied to the *ETU01C* through a "Mickey Mouse" type plug. The *ETU01C* should always be grounded through the protective earth lead of the power cable.

2-4-2. Rear panel connectors

The data channel interfaces are fixed on the rear panel of the *ETU01C* (Refer to Figure 2-1) and consist of DB25pin connectors for RS-530 and V.35. Two RJ-45 interfaces and two pairs of BNC Coax connectors for the main E1 and E1 sub-link. The last connector is a DB9pin connector for the terminal mode console port.

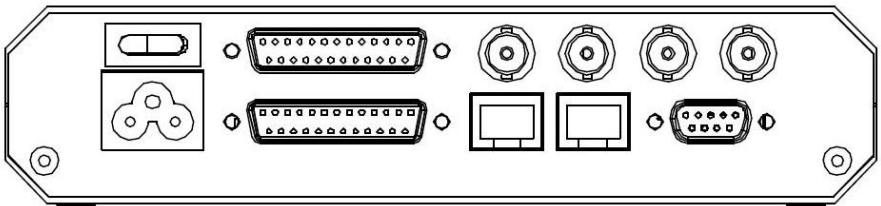


Figure 2-1 *ETU01C* rear panel (AC model)

Chapter 2 Installation

E1 Line side

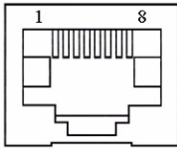
BNC coax connector

Two BNC coax pair of connectors marked RX and TX, provide unbalanced 75 Ohm connections for the Main E1 and Sub E1 lines.

RJ-45 INTERFACE

Two RJ-45 connectors marked Sub E1 and Main E1, provide balanced 120 Ohm connections for the Main E1 and Sub E1 lines.

The pin assignments for RJ-45 connectors are as follows:



- 1 RTIP (Receive data in)
- 2 RRING (Receive data in)
- 4 TTIP (Transmit data out)
- 5 TRING (Transmit data out)

Note: This follows the **USOC RJ-48C** standard.

Data Port Settings

Data Port 1 setting

	J200	J201	J202	J700
V35	1-2	1-2	1-2	2-3
RS530	2-3	2-3	2-3	1-2

Data Port 2 setting

	J300	J301	J302	J701
V35	1-2	1-2	1-2	1-2
RS530	2-3	2-3	2-3	2-3

Chapter 2 Installation

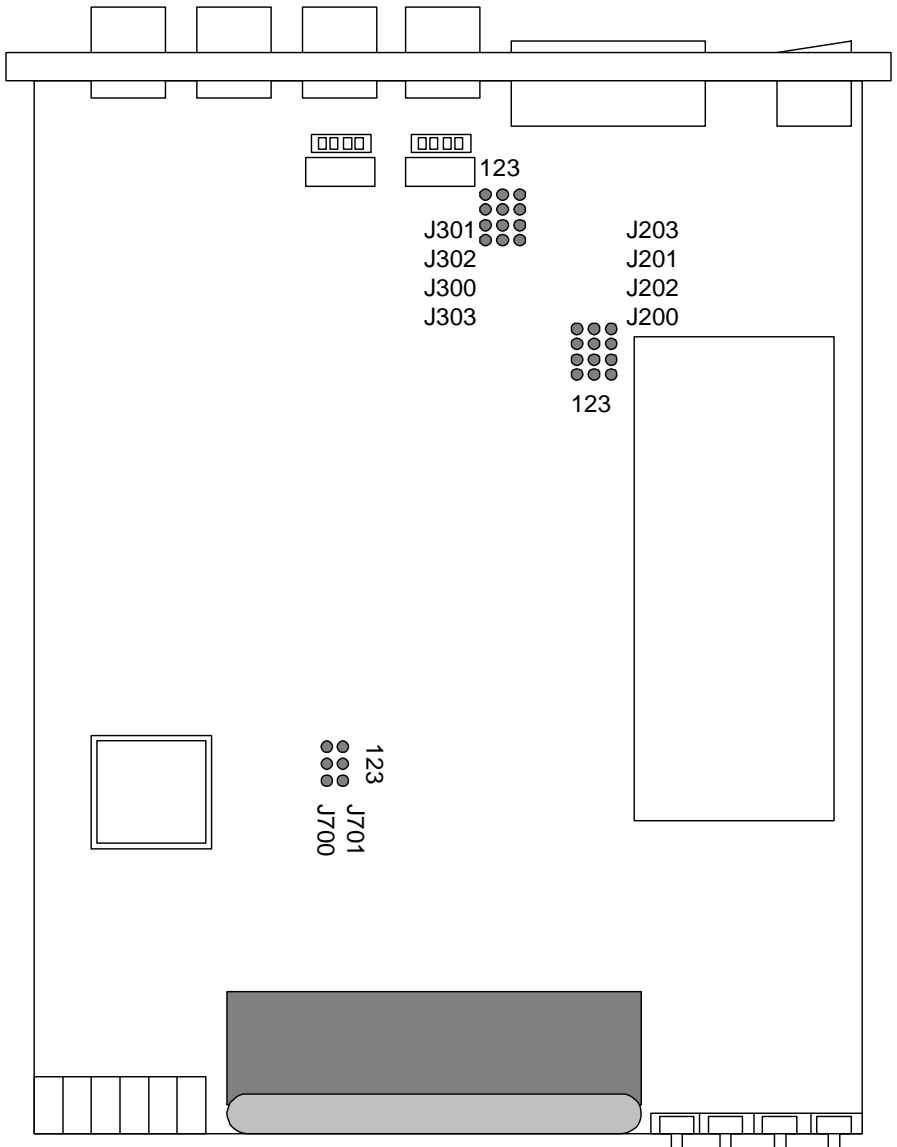


Figure 2-2 Data port jumper settings

Chapter 2 Installation

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Chapter 3 Front Panel Operation

3.1 GENERAL

This chapter describes the **ETU01C** controls and indicators, and explains operation setup procedures using the front panel LCD and menu keys. Installation procedures (in Chapter 2) must be completed and checked before attempting to operate the **ETU01C**.

3.2 CONTROLS AND INDICATORS

All controls (push-button switches), LCD display and LED indicators are located on the **ETU01C** front panel. The momentary on pushbutton switches are used to activate menu selections and select parameter settings.

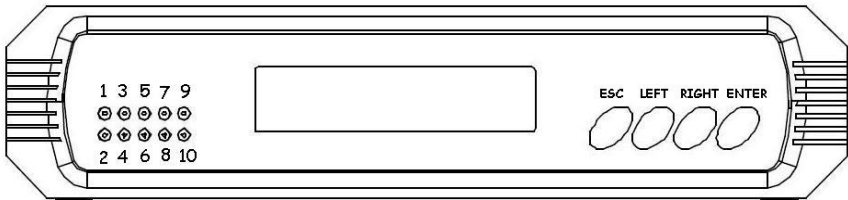


Figure 3-1: **ETU01C** Front Panel

Use the 'LEFT' and 'RIGHT' function keys to browse the menus and select parameters.

Use the 'ESC' function key to return to a previous menu or to abandon setup.

Use the 'Enter' function key to set a parameter of a selection or to enter a sub-menu.

Chapter 3 Front Panel Operation

3.3 Menu Operation

3.3.1 Top Level Menus

The following are the 8 top level Menus. Press an arrow key (LEFT or RIGHT) to select another top level Menu or press ENTER to reach a sub menu.

RUN ON
»»»»»»»»»»»»»»»»

For normal transmissions, the unit must be in 'RUN' mode.

When powered on, the **ETU01C** will work under the last saved setting. Press ESC to stop the running, and the LCD will display:

< SYSTEM >
PARAMETER

Set the default system parameter, save the present parameter, reset the system, and choose the system clock.

< MAIN E1 LINK >
PARAMETER

Set the Line code, interface and distance, transmit buffer, receive buffer, Frame type, and idle code for main E1 link.

< SUB E1 LINK >
PARAMETER

Set the Line code, interface and distance, transmit buffer, receive buffer, Frame type, and idle code for sub E1 link.

< TIME SLOT > MAPPING

Chapter 3 Front Panel Operation

Assign the E1 timeslots to the Data Channels and/or E1 sub-link.

```
< DATA PORT      >
  PARAMETER
```

Data Port informational screen and settings for Clock Mode, Clock Polarity and Handshaking.

```
< LOOPBACK        >
  PARAMETER
```

Enable main link, sub-link, or data channel Loop back.

```
< BERT TEST       >
  PARAMETER
```

Enable BERT, select channel and select pattern.

```
< EXIT CONFIG    >
*****
```

Exit the configuration and run the **ETU01C**.

3.3.2 System Parameter Detail

The following screens show the setup screens under the System Parameter Main Screen.

```
SYSTEM PARAMETER
```

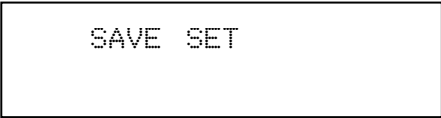
Chapter 3 Front Panel Operation

Press ENTER; the SYSTEM PARAMETER sub-menu will be displayed. You can modify all the system parameters, save all changes, or reset the unit back to the default settings.



DEFAULT

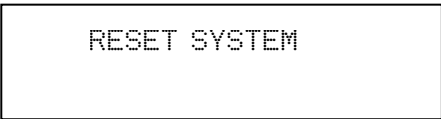
Press ENTER, the **ETU01C** will work in the default mode.



SAVE SET

Press ENTER, the **ETU01C** will store all the parameters as current settings. The next time the **ETU01C** is powered on, all the parameters used will be those that were previously saved.

NOTE: Remember to save the parameters if you want to commit the ETU01C with the current parameters. If not, the **ETU01C** will resume all the parameters from the last saved settings when it is powered on the next time.



RESET SYSTEM

Press ENTER, the system will be reset to factory defaults.

*****BE CAREFUL, THERE IS NO FURTHER CONFIRMATION*****



< SYSTEM CLOCK >
INTERNAL

Press ENTER to set the system clock: *Internal/External(P1, P2)/Recovery(Main E1, Sub E1)*.

NOTE: Only one of the two DTE equipments connected to the two Data Ports can be set as DTE clock source at any one time, and the system clock must be set as the External Clock from the correct Data Port.

Chapter 3 Front Panel Operation

For example, if the equipment connected to the Data Port 1 is set as DTE clock, the system clock of **ETU01C** must be set as External Clock from Data Port 1(External P1).

3.3.3 Main E1 Parameter Detail

The following screens show the setup under the Main E1 Parameter.

```
< MAIN E1 LINK >
PARAMETER
```

Press ENTER and the MAIN E1 LINK sub-menu will be displayed. Main E1 Link sets the *LINE CODE*, *IMPEDANCE*, *LBO*, *TX JITTER*, *RX JITTER*, *FRAME* type and CRC mode for the mainE1 of the **ETU01C**.

```
< LINE CODE >
[HDB3]
```

Use the arrow keys to browse the individual link parameters (frame, CRC, etc.)

Press ENTER on the parameter to select it with the cursors. Now use the arrow keys to browse the available settings for that parameter. The following is a breakdown of parameters and available settings:

LINE CODE: HDB3 or AMI, HDB3 default.

IMPEDANCE: 120ohm or 75ohm, 120ohm default.

LBO: SHORT or LONG, SHORT default.

TX JITTER: ON or OFF, OFF default.

RX JITTER: ON or OFF, OFF default.

FRAME: unframed, CCS or CAS, unframed default.

3.3.4 Sub E1 Link Parameter Detail

The following screens show the setup under the Sub E1 Link Parameter.

```
< SUB E1 LINK >
PARAMETER
```

Chapter 3 Front Panel Operation

Press ENTER and the SUB E1 LINK sub-menu will be displayed. Sub E1 Link sets the *LINE CODE*, *IMPEDANCE*, *LBO*, *TX JITTER*, *FRAME type* *IDLE CODE* and *CRC-4* mode for the Sub E1 of the *ETU01C*.

```
< LINK    CODE >
      HDB3
```

The parameters and settings for the E1 sub-links are the same as for the Main E1 Link above.

3.3.5 Time Slot Mapping Detail

The following screens show the setup under the Time Slot Mapping.

```
<  TIME SLOT  >
      MAPPING
```

Press ENTER

```
FNNNNNNNNN11111111
222220000000000000
```

The E1 frame is shown with 32 timeslots, top row left to right are TS0-15, while the bottom row displays the settings for TS16-31. Press arrows to move the cursor, use ENTER to assign the timeslot as follows:

- N: Not assigned
- 1: Data Channel 1.
- 2: Data Channel 2.
- M: Insert idle code on Main E1 Tx side.
- S: Insert idle code on Sub E1 Tx side.
- C: Insert idle code on both Main E1 Tx side and Sub E1 Tx side. (Refer to Main/Sub E1 Link Parameter Detail to set the idle code.)
- B: BERT test.

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Note:

TS 00: Cannot be assigned in CCS or CAS mode of MAIN E1 LINK to anything but Framing. BERT cannot be assigned to TS 00.

TS 16: Cannot *be* assigned in CAS mode to anything except Signalling. BERT cannot be assigned to this timeslot in CAS mode.

3.3.6 Data Port Parameter Detail

The following screens show the setup under the Data Port Parameter.

```
< DATA PORT  >
PARAMETER
```

Press ENTER:

```
<DATA PORT 1  >
[V.35]
```

This screen shows the Channel 1 interface type. Press LEFT or RIGHT to show the DATA PORT 2 interface type: *V.35/RS530/NO CONNECTED*; Press ENTER and the Channel 1 sub-menu will be displayed. It contains the Clock Select and Clock Polarity.

```
< CLOCK SELECT >
[DCE]
```

Press ENTER to Select: DCE/DTE

```
< CLOCK POLARITY
Tx pos  Rx neg
```

Chapter 3 Front Panel Operation

Press ENTER to select the Clock Polarity:

Type1: Tx pos Rx neg
Type2: Tx pos Rx pos
Type3: Tx neg Rx pos
Type4: Tx neg Rx neg

Tx: Transmit clock

Rx: Receive clock

Pos: Data sync at the clock rising edge.

Neg: Data sync at the clock falling edge.

The parameters and settings for Channel 2 are the same as for Channel 1 above.

3.3.7 Loopback Parameter Detail

The following screens show the setup under the Loopback Parameter. In order to perform Remote Loopback functions, the E1 frame format must be CCS or CAS mode. In BERT mode, the user may also perform loopback test functions.

```
< LOOPBACK >
PARAMETER
```

Press ENTER

```
< FUNCTION >
[OFF]
```

Use the arrow keys to browse the available options for loop back setting. By default, all loop backs are off. The details are as follows:

Main Link: *Loop back off, Local Analog, Local Digital, Local Payload, Remote Analog, or Remote Payload.*

Sub Link: *Loop back off, Local Analog, Local Digital, Local Payload, Remote Analog, or Remote Payload.*

Channel 1 (Data Port 1): *Loop back off, Local Analog, Local Digital, or Remote Digital.*

Channel 2 (Data Port 2): *Loop back off, Local Analog, Local Digital, or Remote Digital.*

Chapter 3 Front Panel Operation

3.3.8 BERT Parameter Detail

The following screens show the setup under the BERT Parameter.

```
< BERT TEST >
PARAMETER
```

Press ENTER

```
< FUNCTION >
OFF
```

Use the arrow keys to browse the available options for BERT setting. By default, *BERT* is off. The details are as follows:

CHANNEL: MAIN -> MAIN, MAIN-> SUB, SUB -> MAIN or SUB -> SUB.
PATTERN: 2e11-1 or 2e15-1.

3.3.9 Exit Configuration

******IMPORTANT****** All of the configuration settings performed up until now can be activated by exiting the configuration menu, back out to 'RUN'. However, unless the settings have been **SAVED**, they will be lost at next power cycle. So, if these are the settings you wish to use permanently, be sure to go back to the *SYSTEM PARAMETER* menu and do *SAVE SET*. Then exit the configuration to the 'RUN' mode.

```
< EXIT CONFIG >
*****
```

Chapter 3 Front Panel Operation

3.3.10 ETU01C LCD menu breakdown

EXIT CONFIG *****	RUN ON >>>>>>>>>>>>>>>>>	
SYSTEM PARAMETER	DEFAULT	Y/N
	SAVE SET	Y/N
	RESET SYSTEM	
	SYSTEM CLOCK	INTERNAL EXTERNAL (P1) EXTERNAL (P2) RECOVERY (M E1) RECOVERY (S E1)
MAIN E1 LINK PARAMETER	LINE CODE	HDB3/AMI
	IMPEDANCE	120/75 ohm
	LBO	LONG/SHORT
	TX JITTER	ON/OFF
	RX JITTER	ON/OFF
	FRAME	UNFRAME CCS CAS
	CRC-4	ON/OFF
	IDLE CODE	7F(00–FF)
SUB E1 LINK PARAMETER	LINE CODE	HDB3/AMI
	IMPEDANCE	120/75 ohm
	LBO	LONG/SHORT
	TX JITTER	ON/OFF
	RX JITTER	ON/OFF
	FRAME	UNFRAME CCS CAS
	CRC-4	ON/OFF
	IDLE CODE	7F(00–FF)
TIME SLOT MAPPING	NNNNNNNNNNNNNNNNNN NNNNNNNNNNNNNNNNNN	N(NO USE) 1(DATA PORT1) 2(DATA PORT2) M(M E1 IDLE CODE) S(S E1 IDLE CODE) C(M&S E1 IDLE CODE)

Chapter 3 Front Panel Operation

		B (BERT CODE)
DATA PORT PARAMETER	DATA PORT1 [V.35]/[RS530]	CLOCK SELECT DCE / DTE
		CLOCK POLARITY [TX POS RX NEG/ TX POS RX POS/ TX NEG RX POS/ TX NEG RX NEG]
	DATA PORT2 [V.35]/[RS530]	CLOCK SELECT DCE / DTE
		CLOCK POLARITY [TX POS RX NEG/ TX POS RX POS/ TX NEG RX POS/ TX NEG RX NEG]
LOOPBACK PARAMETER	FUNCTION	ON/OFF
	MAIN E1	CLOSE / LOCALA / LOCAL D / LOCAL P / REMOTE A / REMOTE P
	SUB E1	CLOSE / LOCALA / LOCAL D / LOCAL P / REMOTE A / REMOTE P
	DATA PORT 1	CLOSE / LOCALA / LOCAL D / REMOTE D
	DATA PORT 2	CLOSE / LOCALA / LOCAL D / REMOTE D
BERT TEST PARAMETER	FUNCTION	ON/OFF
	CHANNEL	MAIN-> MAIN / MAIN- >SUB /SUB-> MAIN / SUB->SUB
	PATTERN	2E11-1 2E15-1

Chapter 4 Control Port Operation

4.1 General

The **ETU01C** Control Port (labeled RS-232) is a console terminal port designed to facilitate setup of all parameters through the use of a standard text based terminal or any terminal emulation program running on a Personal Computer.

4.2 Terminal Connection

A notebook computer has become an invaluable tool of the Systems Engineer. Connection to the computer is very straight forward. The only other hardware required is a DB9-pin one-to-one, male to female cable. The **ETU01C** acts as a DCE to the PC's DTE communications port. A convenient application, provided with the Microsoft Windows® 98/NT/2K/XP operating systems, is "Hyper Terminal". Set the properties to match the **ETU01C** control port defaults as follows: Bits per Second=19200, Data bits=8, Parity=None, Stop bits=1, and Flow Control=none. Make the appropriate connections, start the terminal application, apply power to the **ETU01C**, then press **ENTER** on the PC keyboard. If you are using "Hyper Terminal" the display should look like the following Figure 4-1.

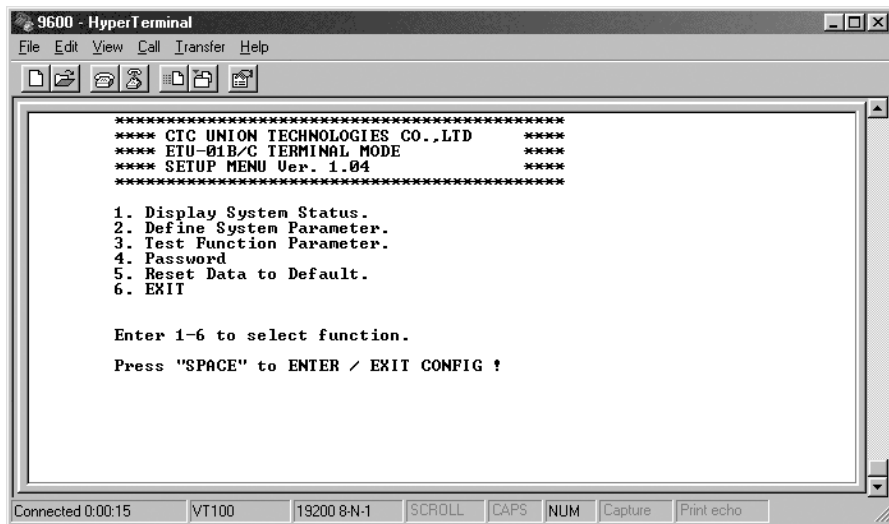


Figure 4-1 HyperTerminal

Chapter 4 Control Port Operation

Note: When a terminal connection is made to the *ETU01C*, the front panel LCD will be locked out and display:

```
*CONTROL PORT *  
CONNECTED >>>>
```

4.3 Menu System Detail

The menu systems are displayed in the same order and with the same parameters as those in the LCD display. The following section will detail actual displays with descriptions of parameter settings via relevant key commands.

This is the first screen seen after connecting. Note that the first two items, Display and Define deal with all the system settings. The Display item will browse settings for viewing only, while under Define, all parameters may be both viewed and changed.

```
*****  
**** CTC UNION TECHNOLOGIES CO., LTD ****  
**** ETU-01B/C TERMINAL MODE ****  
**** SETUP MENU Ver. 1.04 ****  
*****  
  
1. Display System Status.  
2. Define System Parameter.  
3. Test Function Parameter.  
4. Password  
5. Reset Data to Default.  
6. EXIT  
  
Enter 1-6 to select function.  
Press "SPACE" to ENTER / EXIT CONFIG !
```

Figure 4-2 Top menu

Enter 1 to *Display System Status*

Chapter 4 Control Port Operation

<< Display System Status >>

1. System Clock
2. Main E1 Parameter
3. Sub E1 Parameter
4. Data Port1 Parameter
5. Data Port2 Parameter
6. Time Slot Mapping
7. LoopBack Test
8. BERT Test

Enter 1-8 or Press "ESC" to previous menu.

Enter 1 to *Display System Clock Parameter*

<< Display System Clock Parameter >>

System Clock : INTERNAL

Press "ESC" to previous menu.

The display shows that the System Clock Parameter is derived from the internal oscillator. Exit this menu to the previous one, Press ESC.

Chapter 4 Control Port Operation

<< Display System Status >>

1. System Clock
2. Main E1 Parameter
3. Sub E1 Parameter
4. Data Port1 Parameter
5. Data Port2 Parameter
6. Time Slot Mapping
7. LoopBack Test
8. BERT Test

Enter 1-8 or Press "ESC" to previous menu.

Enter 2 to *Display Main E1 Parameter*

<< Display Main E1 Parameter >>

Line Code : HDB3
Impedance : 75 ohm
LBO : SHORT
TX Jitter : OFF
RX Jitter : OFF
Frame : CCS
CRC-4 : OFF
Idle Code : 7FH

Press "ESC" to previous menu.

The above display shows the settings for the Main E1 Line Code, E1 interface impedance, LBO, Tx jitter, Rx jitter, Frame type, CRC setting and Idle code for the main E1 link. To return to the previous display, enter ESC.

Chapter 4 Control Port Operation

Enter 3 to *Display Sub E1 Parameter*

<< Display Sub E1 Parameter >>

Line Code : HDB3
Impedance : 120 ohm
LBO : SHORT
TX Jitter : OFF
RX Jitter : OFF
Frame : UNFRAME
CRC-4 : OFF
Idle Code : 7FH

Press "ESC" to previous menu.

The above display shows the settings for the Sub E1 Line Code, E1 interface impedance, LBO, Tx jitter, Rx jitter, Frame type, CRC setting and Idle code for the sub E1 link. To return to the previous display, enter ESC.

Enter 4 to *Display Data Port1 Parameter*

<< Display Data Port1 Parameter >>

Type : V.35
Clock : DCE
Clock Polarity : TX Positive ; RX Negative

Press "ESC" to previous menu.

The Data Port display shows the current setting of the physical data port, either V.35 or RS-530. The clock setting and TC RC polarity are also shown in this information display. Press ESC to return. Item 5 will display Port 2 parameters.

Chapter 4 Control Port Operation

Enter 6 to display the Time Slot Mapping

<< Display Time Slot Mapping >>

SLOT :	00	01	02	03	04	05	06	07
TYPE :	N	M	M	M	M	M	M	N
SLOT :	08	09	10	11	12	13	14	15
TYPE :	N	N	N	N	N	N	N	N
SLOT :	16	17	18	19	20	21	22	23
TYPE :	N	N	N	N	N	N	N	N
SLOT :	24	25	26	27	28	29	30	31
TYPE :	N	N	N	N	N	N	N	N

N: Time Slot not used 1,2: Data Port 1,2
M: Main E1 Idle Code S: Sub E1 Idle Code
C: Main & Sub E1 Idle Code
B: Bert Time Slot

Press "ESC" to previous menu.

The Time Slot mapping display shows the assignments for all of the 32 timeslots of the E1 frame. All timeslots 0-31 are shown with the assigned abbreviations shown directly beneath. In CCS and CAS modes, never assign TS0. In CAS mode, never assign TS16. To return to the previous display, enter ESC.

Enter 7 to *Display LoopBack Test* information

<< Display LoopBack Test >>

Function : OFF
Main E1 : OFF
Sub E1 : OFF
Data Port1: OFF
Data Port2: OFF

Press "ESC" to previous menu.

Enter ESC to return to the Display System Status menu.

Chapter 4 Control Port Operation

Enter 8 to *Display BERT Test* information.

```
<< Display BERT Test >>

Function : OFF
Channel  : Main to Main
Pattern  : 2E11-1

Press "ESC" to previous menu.
```

Enter ESC to return to the Display System Status menu. Then press ESC again to go to the very top menu display.

```
*****
**** CTC UNION TECHNOLOGIES CO., LTD ****
**** ETU-01B/C TERMINAL MODE ****
**** SETUP MENU Ver. 1.04 ****
*****

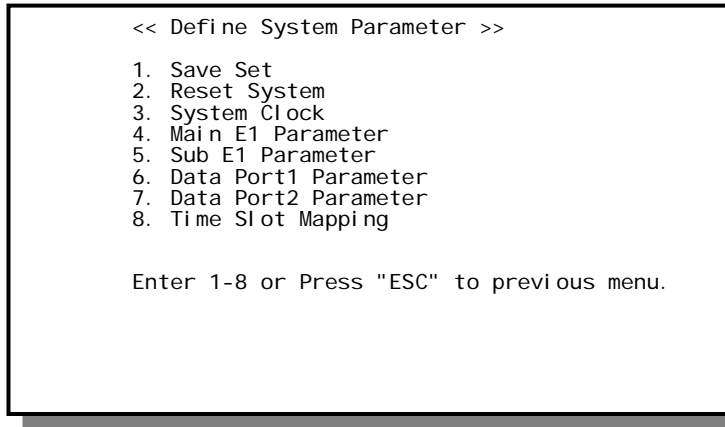
1. Display System Status.
2. Define System Parameter.
3. Test Function Parameter.
4. Password
5. Reset Data to Default.
6. EXIT

Enter 1-6 to select function.

Press "SPACE" to ENTER / EXIT CONFIG !
```

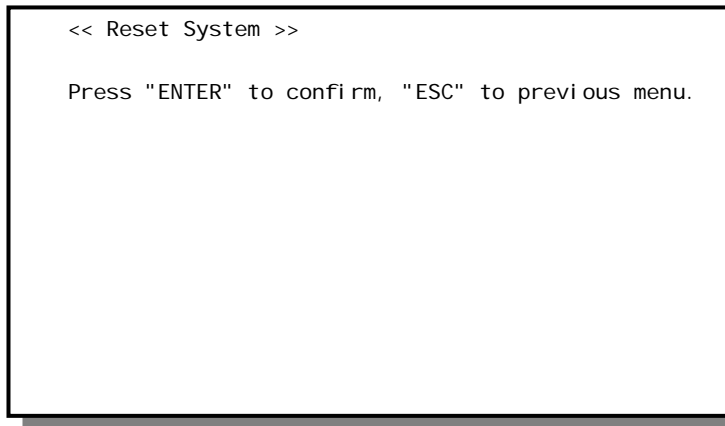
Now we will look at setting up the system parameters. To do this, enter 2.

Chapter 4 Control Port Operation



The first selection of system parameters is the *Save Set*, and the second selection is Reset System. We recommend you do a system reset prior to configuring and then you must do a 'Save Set' after finishing the configuration. So let's enter 2 first.

******IMPORTANT****** You must do SAVE SET for configuration changes to be remembered.



You need to wait about 10 seconds, then the screen will go blank. Press ENTER to return to the start up screen. Press 2 to re-enter the Define Configuration page.

Chapter 4 Control Port Operation

To Define System Clock Parameter, press 3.

<< Define System Clock Parameter >>

System Clock : INTERNAL

1. INTERNAL
2. EXTERNAL (P1)
3. EXTERNAL (P2)
4. RECOVERY (M E1)
5. RECOVERY (S E1)

Enter 1-5 or Press "ESC" to previous menu.

The display shows that the system clock is currently derived from the internal oscillator. To change it, select one of the appropriate choices, one thru five or to exit without changing press ESC.

NOTE: Only one of the two Data equipments connected with the two Data Port interfaces can be set as DTE clock at any one time, and the system clock must be set as the External Clock from the Data Port that is supplying the external clock. For example, the equipment connected with the Data Port 1 is set as DTE clock, the system clock of **ETU01C** must be set as External Clock from Data Port 1 (External P1).

Press 4 to Define Main E1 Parameter

<< Define Main E1 Parameter >>

1. Line Code
2. Impedance
3. LBO
4. TX Jitter
5. RX Jitter
6. Frame
7. CRC-4
8. Idle Code

Enter 1-8 or Press "ESC" to previous menu.

Chapter 4 Control Port Operation

Under the display, press 1-8 to define each parameter for the Main E1. For example, to change the Main E1 Idle Code, press 8:

```
<< Define Main E1 Idle Code >>

Idle Code : 7FH

Press "SPACE" to move.
Press "ENTER" to select.

Press "ESC" to previous menu.
```

Enter the new idle code with the hex value 00-FF, or to exit, press ESC to the Define Main E1 Parameter display, then press ESC again to the Define System Parameter display.

```
<< Define System Parameter >>

1. Save Set
2. Reset System
3. System Clock
4. Main E1 Parameter
5. Sub E1 Parameter
6. Data Port1 Parameter
7. Data Port2 Parameter
8. Time Slot Mapping

Enter 1-8 or Press "ESC" to previous menu.
```

Press 5 to define *Sub E1 Parameter* details, the same as for the Main E1.

Chapter 4 Control Port Operation

Press 6 to *Define Data Port 1 Parameter*

```
<< Define Data Port1 Parameter >>

TYPE           : V. 35
Clock          : DCE
Clock Polarity : TX Positive ; RX Negative

1. Clock
2. Clock Polarity

Enter 1-2 or press "ESC" to previous menu.
```

To change the Data Port1 Clock press 1 , to change the Clock Edge press 2. Press ESC to exit without changing. To change the interface type, the jumpers inside the unit must be adjusted. Please refer to Chapter 2, Installation for details.

Press 7 to define Data Port 2 Parameters, which are the same as for Data Port 1.

Press 8 to *Define Time Slot Mapping*

```
<< Define Time Slot Mapping >>

N N N N N N N N N N N N N N N N
N N N N N N N N N N N N N N N N

Press "SPACE" to move.
Press "ENTER" to select.
Press "ESC" to previous menu.
First Line: 0-15 Time Slot
Second Line: 16-31 Time Slot

N: Time Slot not used   1,2: Data Port 1,2
M: Main E1 Idle Code   S: Sub E1 Idle Code
C: Main & Sub E1 Idle Code
B: Bert Time Slot
```

Pressing the space bar will move the cursor to the next timeslot entry. Repeatedly pressing Enter will make the selection between 'M, 1, 2, S, C, B and N'.

Enter ESC to return to the Define System Parameter menu.

Chapter 4 Control Port Operation

Now that all parameters have been set, it would be a good time to save all the settings.

Enter 1 to *Save Set*

```
<< Save All System Set >>
```

Press "ENTER" to confirm, "ESC" to previous menu.

Press Enter to confirm. The screen will display the message "Save Set is OK!" to confirm the settings were saved successfully.

Press ESC again to go to the very top menu display.

```
*****
**** CTC UNION TECHNOLOGIES CO., LTD ****
**** ETU-01B/C TERMINAL MODE ****
**** SETUP MENU Ver. 1.04 ****
*****
```

1. Display System Status.
2. Define System Parameter.
3. Test Function Parameter.
4. Password
5. Reset Data to Default.
6. EXIT

Enter 1-6 to select function.

Press "SPACE" to ENTER / EXIT CONFIG !

Chapter 4 Control Port Operation

Now we will look at setting up the *Test Function Parameter*. To do this, enter 3.

<< Define Test Mode Function >>

1. LoopBack Test
2. BERT Test

Enter 1-2 or press "ESC" to previous menu.

To Define *LoopBack Test Function*, Press 1.

<< Define LoopBack Test Function >>

Function	: OFF		
Main E1	: OFF	Sub E1	: OFF
Data Port1:	OFF	Data Port2:	OFF

1. Function
2. Main E1
3. Sub E1
4. Data Port1
5. Data Port2

Enter 1-5 or Press "ESC" to previous menu.

Chapter 4 Control Port Operation

To enable or disable the *Loopback function*, Press 1.

<< LoopBack Function >>

Function : OFF

1. ON
2. OFF

Enter 1-2 or press "ESC" to previous menu.

The current setting for Loop Back is OFF. To turn on, press 1. To exit without changing, press ESC.

Note: First you will need to define where the loopback will be (items 2-5)

<< Define LoopBack Test Function >>

Function : OFF

Main E1 : OFF

Data Port1: OFF

Sub E1 : OFF

Data Port2: OFF

1. Function
2. Main E1
3. Sub E1
4. Data Port1
5. Data Port2

Enter 1-5 or Press "ESC" to previous menu.

To define the *Main E1 LoopBack*, enter 2.

Chapter 4 Control Port Operation

<< Main E1 LoopBack >>

Main E1 : OFF

1. OFF
2. Local Analog
3. Local Digital
4. Local Payload
5. Remote Analog
6. Remote Payload

Enter 1-6 or Press "ESC" to previous menu.

Press 2-6 to initiate a loop back of the main E1 link, press 1 to stop loop back, or press ESC to return to the previous menu without any change.

Sub E1 Loop Back settings are the same as the Main E1 settings.

****IMPORTANT**** Remote loopbacks are not possible when E1 is in unframed mode.

<< Define LoopBack Test Function >>

Function : OFF
Main E1 : OFF
Data Port1: OFF

Sub E1 : OFF
Data Port2: OFF

1. Function
2. Main E1
3. Sub E1
4. Data Port1
5. Data Port2

Enter 1-5 or Press "ESC" to previous menu.

Press 4 to *Data Port1* loopback test function

Chapter 4 Control Port Operation

<< Data Port1 LoopBack >>

Data Port : OFF

1. OFF
2. Local Analog
3. Local Digital
4. Remote Loop

Enter 1-4 or Press "ESC" to previous menu.

Note: When Data Port Local Analog Loop Back is initiated, the DTE connected should be providing its own Clock.

Data Port 2 Loop Back settings are the same as Data Port 1 settings. Press ESC twice to exit to the Define Test Mode Function display.

<< Define Test Mode Function >>

1. LoopBack Test
2. BERT Test

Enter 1-2 or press "ESC" to previous menu.

Define BERT test function, press 2.

Chapter 4 Control Port Operation

```
<< Define BERT Test Function >>

Function : OFF      Channel : Main to Main
Pattern  : 2E11-1

1. Function
2. Channel
3. Pattern

Enter 1-3 or Press "ESC" to previous menu.
```

Press 1 to initiate or close the function; press 2 to define the BERT channel (refer to Chapter 1); press 3 to define the BERT pattern; press ESC to exit without changing.

Press ESC one last time to reach to top level menu.

```
*****
**** CTC UNI ON TECHNOLOGIES CO. , LTD ****
**** ETU-01B/C TERMINAL MODE ****
**** SETUP MENU Ver. 1.04 ****
*****

1. Display System Status.
2. Define System Parameter.
3. Test Function Parameter.
4. Password
5. Reset Data to Default.
6. EXIT

Enter 1-6 to select function.

Press "SPACE" to ENTER / EXIT CONFIG !
```

The following is an example of Password setting for the *ETU01C*.
Press 4.

Chapter 4 Control Port Operation

<< Password >>

1. Set Password
2. Clear Password

Enter 1-2 or press "ESC" to previous menu.

Enter 1 to set the *Password*

<< Password >>

Enter Password (4 Number) :

Press "ENTER" to confirm, "ESC" to previous menu.
Press "SPACE" to clear.

Enter 1234. Then press ENTER, the screen will display:

Your Password is OK !

Press ESC.

Chapter 4 Control Port Operation

<< Password >>

1. Set Password
2. Clear Password

Enter 1-2 or press "ESC" to previous menu.

To clear the password, press 2.

<< Clear Password >>

Enter original password :

Press "ENTER" to confirm, "ESC" to previous menu.
Press "SPACE" to clear.

Enter the original password, 1234. Then press ENTER, the screen will display:

Your Password is clear!

Press ESC.

Chapter 4 Control Port Operation

Press ESC back to go back to the main menu.

```
*****
**** CTC UNION TECHNOLOGIES CO., LTD ****
**** ETU-01B/C TERMINAL MODE ****
**** SETUP MENU Ver. 1.04 ****
*****
```

1. Display System Status.
2. Define System Parameter.
3. Test Function Parameter.
4. Password
5. Reset Data to Default.
6. EXIT

Enter 1-6 to select function.

Press "SPACE" to ENTER / EXIT CONFIG !

To reset all parameters to the original factory default settings, press 5.

```
<< Reset Data to Factory Default >>
```

Press "ENTER" to confirm, "ESC" to previous menu.

All settings are effected.

Chapter 4 Control Port Operation

Press ESC.

```
*****  
**** CTC UNION TECHNOLOGIES CO., LTD ****  
**** ETU-01B/C TERMINAL MODE ****  
**** SETUP MENU Ver. 1.04 ****  
*****
```

1. Display System Status.
2. Define System Parameter.
3. Test Function Parameter.
4. Password
5. Reset Data to Default.
6. EXIT

Enter 1-6 to select function.

Press "SPACE" to ENTER / EXIT CONFIG !

To exit the terminal mode, press 6. The terminal connection will be dropped and the front panel LCD will return to its normal 'RUN' condition.

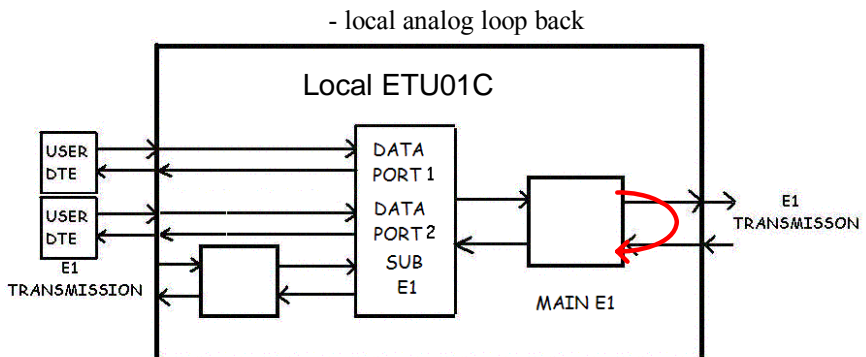
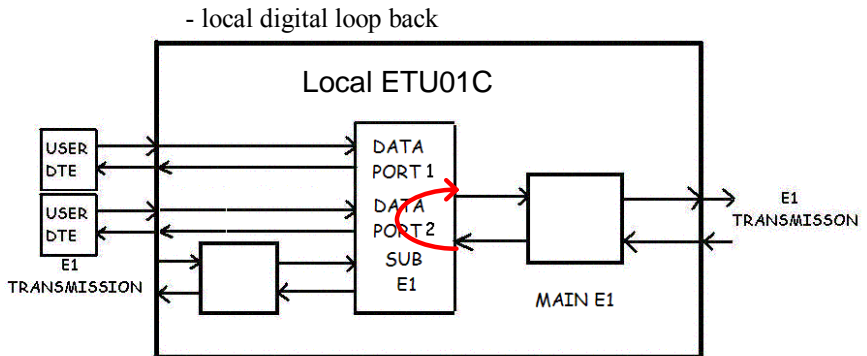
*****IMPORTANT***** The unit will not transmit normally unless it is in *RUN* mode.

This completes the detailed examples of terminal mode operation for the *ETU01C*.

Chapter 5 Diagnostic Tests

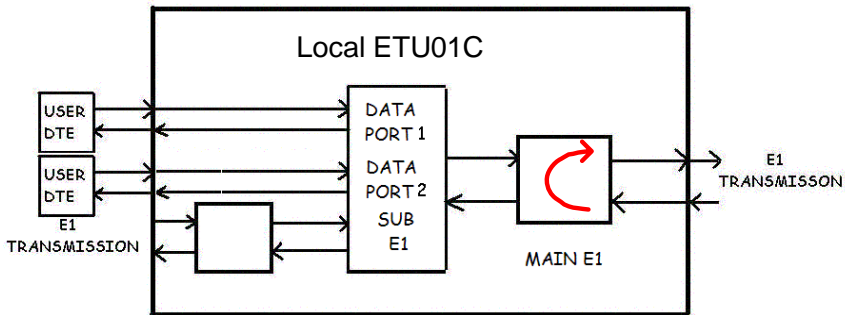
5.1 Test Loops

–Main E1 link loop back

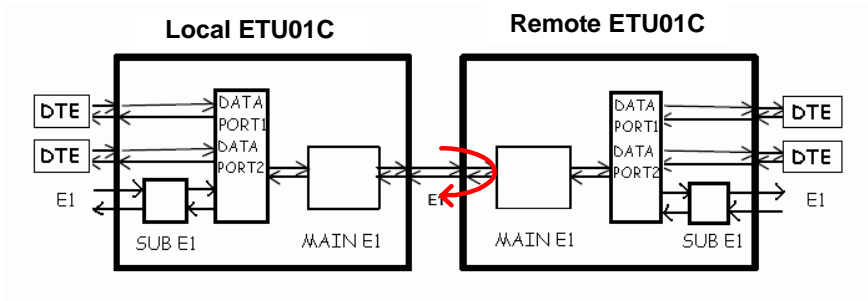


Chapter 5 Diagnostic Tests

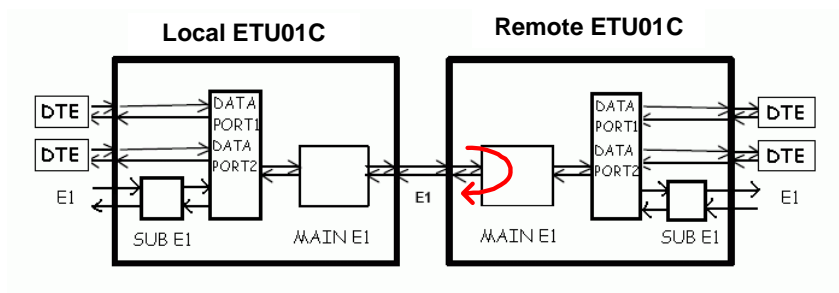
- local payload loop back



- remote analog loop back



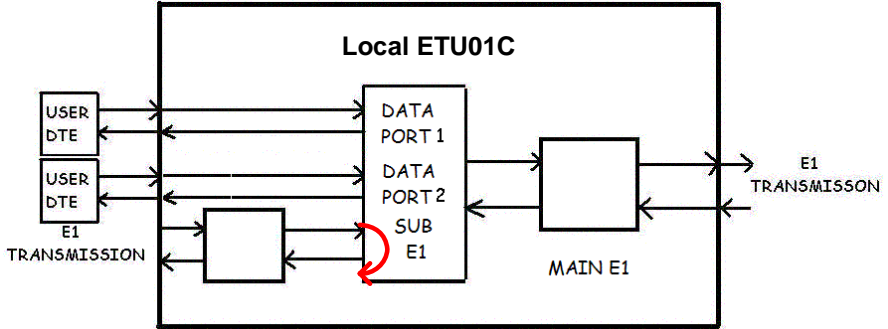
- remote payload loop back



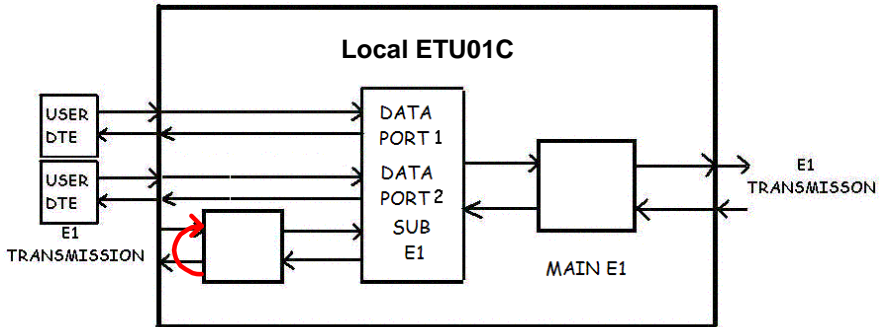
Chapter 5 Diagnostic Tests

-Sub E1 link loop back

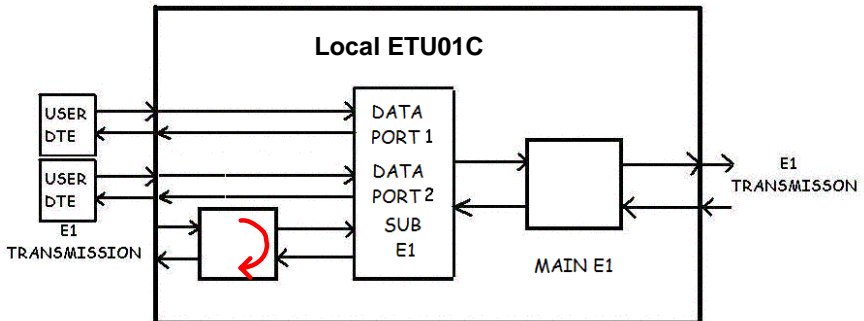
- local digital loop back



- local analog loop back

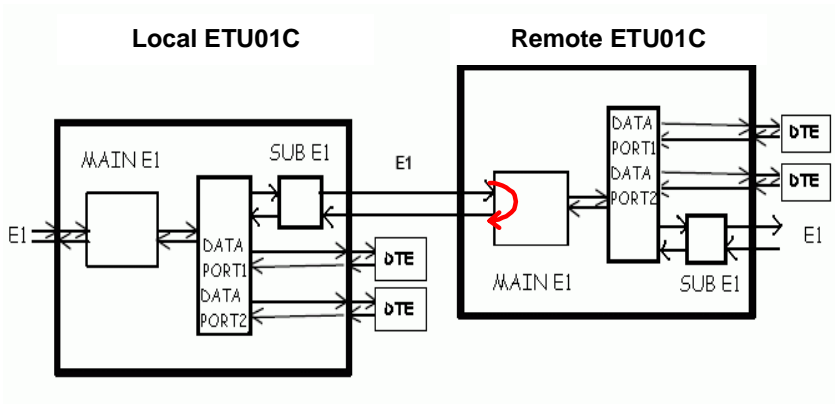


- local payload loop back

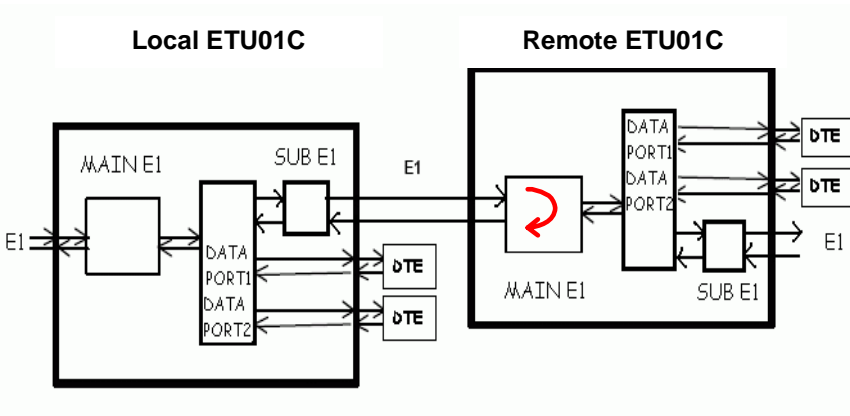


Chapter 5 Diagnostic Tests

- remote analog loop back



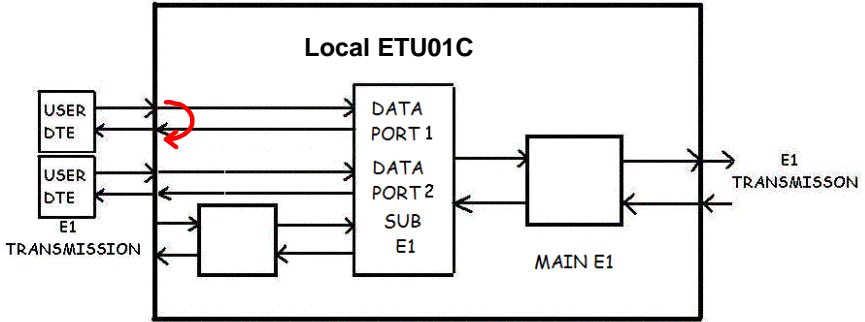
- remote payload loop back



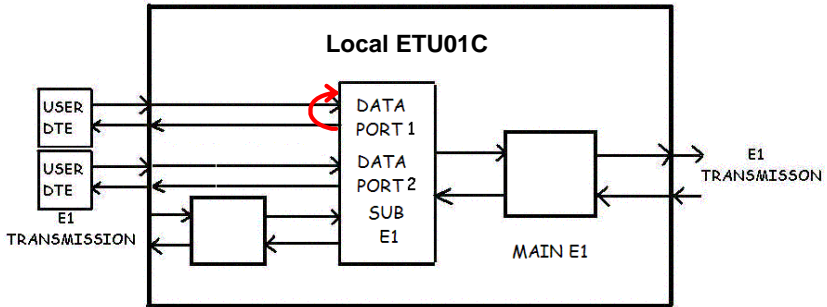
Chapter 5 Diagnostic Tests

-Data Port loop back

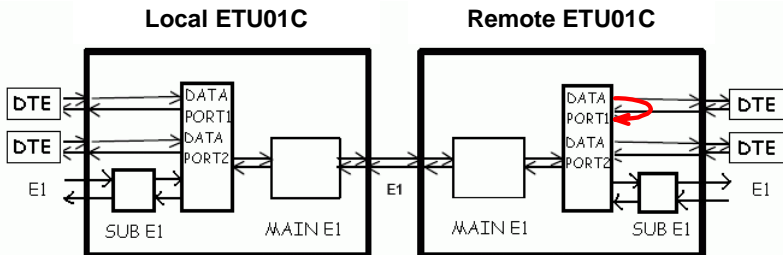
-Data Port1 local analog loop back



- Data Port1 local digital loop back

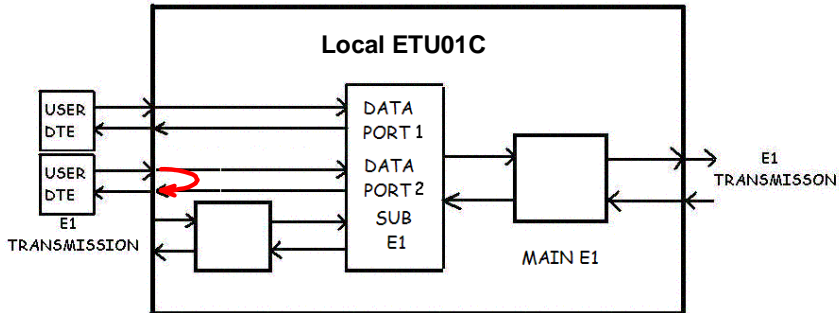


- Data Port1 remote loop back

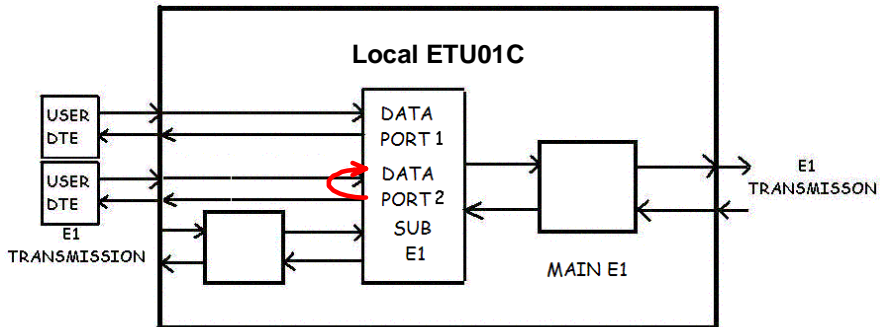


Chapter 5 Diagnostic Tests

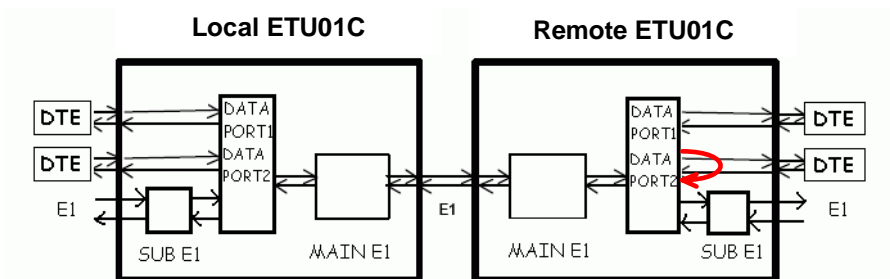
- Data Port2 local analog loop back



- Data Port2 local digital loop back



- Data Port2 remote loop back

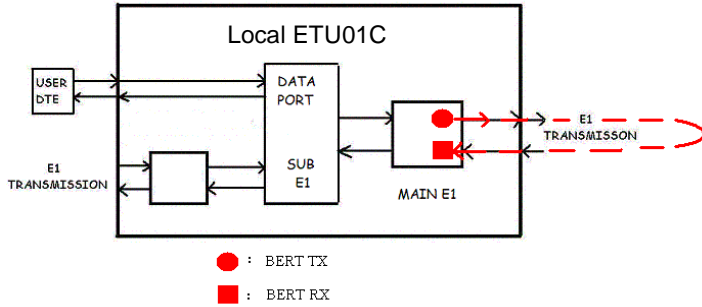


Note: Each of the remote loop back must fit the E1 in CCS or CAS.

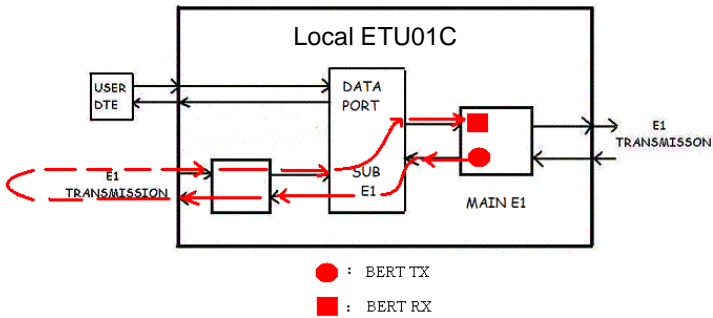
Chapter 5 Diagnostic Tests

BERT TEST:

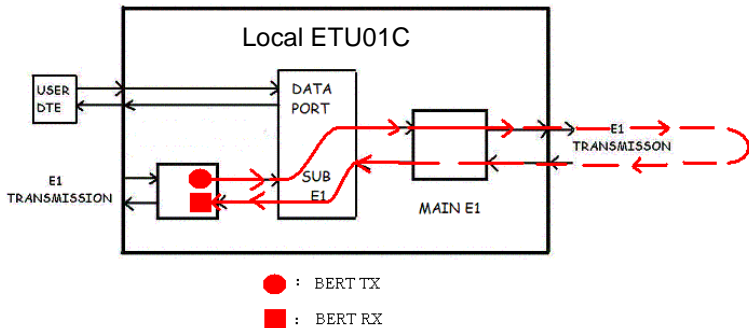
-MAIN → MAIN:



-MAIN → SUB:

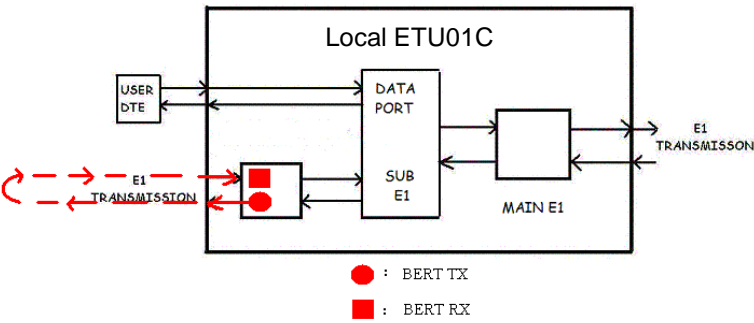


-SUB → MAIN:



Chapter 5 Diagnostic Tests

-SUB -> SUB:



Appendix A

A.1

RS-530 Cables,
25 conductor round, 1 to 1, 100cm.

Male DB25 PIN		Male(or Female) DB25 PIN
1	<=====>	1
2	<=====>	2
3	<=====>	3
4	<=====>	4
5	<=====>	5
6	<=====>	6
7	<=====>	7
8	<=====>	8
9	<=====>	9
10	<=====>	10
11	<=====>	11
12	<=====>	12
13	<=====>	13
14	<=====>	14
15	<=====>	15
16	<=====>	16
17	<=====>	17
18	<=====>	18
19	<=====>	19
20	<=====>	20
21	<=====>	21
22	<=====>	22
23	<=====>	23
24	<=====>	24
25	<=====>	25

Appendix A

A.2

V.35 Cables,
multi-conductor round, 100cm.

Male DB25 PIN		Male(or Female) MB34 PIN
2	<=====>	P
14	<=====>	S
3	<=====>	R
16	<=====>	T
4	<=====>	C
5	<=====>	D
6	<=====>	E
20	<=====>	H
8	<=====>	F
24	<=====>	U
11	<=====>	W
15	<=====>	Y
12	<=====>	AA
17	<=====>	V
9	<=====>	X
1	<=====>	A
7	<=====>	B
22	<=====>	J

NOTE: TWISTED PAIRS;
P,S
R,T
U,W
Y,AA
V,X

A.3

RS-449 Cables,
multi-conductor round, 100cm.

Male DB25 PIN		Male(or Female) DB37 PIN
1	<=====>	1
7	<=====>	19,20,37
(the following are all twisted pairs)		
2	<=====>	4
14	<=====>	22
3	<=====>	6
16	<=====>	24
4	<=====>	7
19	<=====>	25
5	<=====>	9
13	<=====>	27
6	<=====>	11
22	<=====>	29
20	<=====>	12
23	<=====>	30
8	<=====>	13
10	<=====>	31
24	<=====>	17
11	<=====>	35
15	<=====>	5
12	<=====>	23
17	<=====>	8
9	<=====>	26

A.4

X.21 Cables,
multi-conductor round, 100cm.

	Female DB25		Male(or Female) DB15
	PIN		PIN
	1	<=====>	1
	7	<=====>	8
(the following are all twisted pairs)			
	2	<=====>	2
	14	<=====>	9
	3	<=====>	4
	16	<=====>	11
	4	<=====>	3
	19	<=====>	10
	8	<=====>	5
	10	<=====>	12
	15,17	<=====>	6
	9,12	<=====>	13

TECHNICAL INQUIRY FORM

CTC Union Technologies Inc

Fax: +886-2-2799-1355

Tel: +886-2-2659-1021

E-mail: support@ctcu.com

Taipei Taiwan

Attn : Technical Support Division

From Company: _____

Name: _____

Tel: (____) _____

Fax: (____) _____

■ MODEL: ETU01C

■ ACTIVITY: Check every setting including physical interface and system setting

■ SYS CONFIGURATION:

■ Question:

Data Port Information; CHECK internal jumper settings

Data port 1	RS530 <input type="checkbox"/>	V.35 <input type="checkbox"/>
Data port 1	RS530 <input type="checkbox"/>	V.35 <input type="checkbox"/>

Parameters User setting; check all configurations

Applications	Point-to-point <input type="checkbox"/> ETU01C to E1 Network device <input type="checkbox"/>			
System Clock	INTERNAL <input type="checkbox"/> RECOVERY (M E1) <input type="checkbox"/> / RECOVERY (S E1) <input type="checkbox"/> EXTERNAL (P1) <input type="checkbox"/> / EXTERNAL (P2) <input type="checkbox"/>			
Main E1 link parameters				
Line Code	AMI <input type="checkbox"/> / HDB3 <input type="checkbox"/>			
Line Impedance	Unbalanced 75 ohms <input type="checkbox"/> / Balanced 120 ohms <input type="checkbox"/>			
LBO	Long <input type="checkbox"/> / Short <input type="checkbox"/>			
Tx Jitter	ON <input type="checkbox"/> / OFF <input type="checkbox"/>	Rx Jitter	ON <input type="checkbox"/> / OFF <input type="checkbox"/>	
Frame	Unframed <input type="checkbox"/> -FAS (PCM31) <input type="checkbox"/> -FAS+CAS (PCM30) <input type="checkbox"/>	-CRC4 ON <input type="checkbox"/> / OFF <input type="checkbox"/> -IDLE CODE (00-FF)		
Sub E1 link parameters				
Line Code	AMI <input type="checkbox"/> / HDB3 <input type="checkbox"/>			
Line Impedance	Unbalanced 75 ohms <input type="checkbox"/> / Balanced 120 ohms <input type="checkbox"/>			
LBO	Long <input type="checkbox"/> / Short <input type="checkbox"/>			
Tx Jitter	ON <input type="checkbox"/> / OFF <input type="checkbox"/>			
Rx Jitter	ON <input type="checkbox"/> / OFF <input type="checkbox"/>			
Frame	Unframed <input type="checkbox"/> -FAS (PCM31) <input type="checkbox"/> -FAS+CAS (PCM30) <input type="checkbox"/>	-CRC4 ON <input type="checkbox"/> / OFF <input type="checkbox"/> -IDLE CODE (00-FF)		
Time slot mapping	1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 □ 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3 3 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1		N(no use) 1(Data port1) 2(Data port2) M(M E1 idle code) S(S E1 idle code) C(M&S E1 idle code) B(BERT code)	
Data port parameter				
Data port 1	V.35 <input type="checkbox"/> / RS530 <input type="checkbox"/>			
Clock select	DCE <input type="checkbox"/> / DTE <input type="checkbox"/>			
Clock polarity	TX POS RX NEG <input type="checkbox"/> / TX POS RX POS <input type="checkbox"/> TX NEG RX POS <input type="checkbox"/> / TX NEG RX NEG <input type="checkbox"/>			
Data port 2	V.35 <input type="checkbox"/> / RS530 <input type="checkbox"/>			
Clock select	DCE <input type="checkbox"/> / DTE <input type="checkbox"/>			
Clock polarity	TX POS RX NEG <input type="checkbox"/> / TX POS RX POS <input type="checkbox"/> TX NEG RX POS <input type="checkbox"/> / TX NEG RX NEG <input type="checkbox"/>			

E1 Series



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